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Subject: Lower Duwamish Proposed Plan Region 10
Date: Thursday, February 28, 2013 8:24:11 AM
Attachments: ldw_pp_022513[1].pdf

Jim, I pulled out the RAOs from the Lower Duwamish (Region 10) Proposed Plan, doesn't look like they included a time frame in the RAOs, it may be mentioned later in the document I have not read it all. I also included Table 8 of the PP which includes the PRGs for comparison to Kalamazoo, see attached. This was just released for public comment so it should be the most recent example of what is being done. A link to the document is included below.

JK

RAO:

The proposed cleanup in this plan addresses the third component of this strategy, cleanup of the in-waterway portion of the Site. It is based on four goals, which EPA calls Remedial Action Objectives (RAOs):

RAO 1: Reduce to protective levels the human health risks associated with consumption of contaminated Lower Duwamish Waterway resident fish and shellfish by adults and children with the highest potential exposure.

RAO 2: Reduce to protective levels the human health risks from direct contact (skin contact and incidental ingestion) to contaminated sediments during netfishing, clamming, and beach play.

RAO 3: Reduce to protective levels the risks to benthic invertebrates from exposure to contaminated sediments.

RAO 4: Reduce to protective levels the risks to crabs, fish, birds, and mammals from exposure to contaminated sediment, surface water, and prey.

http://www.epa.gov/region10/pdf/sites/ldw/pp/ldw_pp_022513.pdf

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RAOs 1, 2 and 4, the 95% upper confidence limit on the mean (UCL95) measured over the following areas of compliance will be used to measure success in attaining PRGs.

- For RAO 1, PRGs must be met LDW-wide.
- For RAO 2, PRGs are applied as follows:
  - For beach play areas, PRGs must be met at individual beaches identified in Figure 2.
  - For clamming areas, PRGs must be met across all clamming areas (Figure 2).
  - For net-fishing, PRGs must be met LDW-wide.
- For RAO 4, PRGs must be met LDW-wide.

The PRGs must be met, on average, at varying depths, as described below:

- In intertidal areas including beaches used for recreation and clamming, human-health direct contact PRGs (for PCBs, arsenic, cPAHs, and dioxins/furans) must be met in the top 45 cm because exposure to sediments at depth is more likely through digging or other disturbances. Human health PRGs for RAO 1 (seafood consumption) and ecological PRGs must be met in surface sediments (top 10 cm).
- In subtidal areas, PRGs for all COCs must be met in surface sediments (top 10 cm).

Table 8. Sediment PRGs for PCBs, Arsenic, cPAHs, and Dioxins/Furans for Human Health and Ecological COCs

COC	Preliminary Remediation Goals				
	RAO 1: Human Seafood Consumption	RAO 2: Human Direct Contact	RAO 4: Ecological (River Otter)	Basis	Spatial Scale of PRG Application
PCBs (µg/kg dw)	2	1,300	128 - 159	background (RAO 1) RBTC (RAO 2) RBTC (RAO 4)	LDW-wide
	n/a	500	n/a	RBTC	Clamming Areas
	n/a	1,700	n/a	RBTC	Individual Beaches
Arsenic (mg/kg dw)	n/a	7	n/a	background	LDW-wide
	n/a	7	n/a	background	Clamming Areas
	n/a	7	n/a	background	Individual Beaches
cPAH (µg TEQ/kg dw)	n/a	380	n/a	RBTC	LDW-wide
	n/a	150	n/a	RBTC	Clamming Areas
	n/a	90	n/a	RBTC	Individual Beaches
Dioxins/Furans (ng TEQ/kg dw)	2	37	n/a	background (RAO 1) RBTC (RAO 2)	LDW-wide
	n/a	13	n/a	RBTC	Clamming Areas
	n/a	28	n/a	RBTC	Individual Beaches

RBTC - Risk-based threshold concentration (based on 1 in 1,000,000 excess cancer risk or HQ of 1)

Background - see Table 3 in Section 3.6.1